HAiCOM™

GPS

HI-303 MMF
(Multi-Mode Foldable)
GPS Receiver

User Manual

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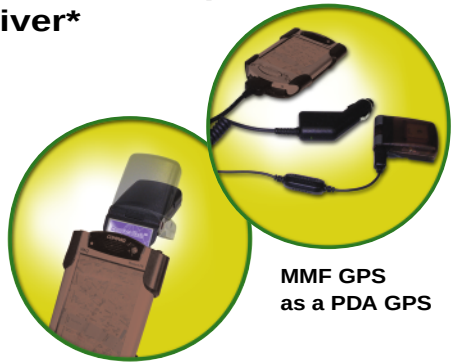
MMF GPS

(Multi-Mode Foldable) GPS receiver*



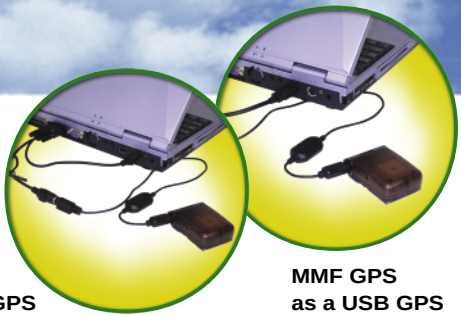
MMF GPS as a PDA GPS

MMF GPS as a CF GPS

ADVANTAGES:

Universal GPS Solution:

MMF GPS can be virtually any kinds of GPS receivers, such as, CompactFlash GPS, USB GPS, Serial GPS, Any PDA GPS, etc. You won't need to buy several GPS receivers to fit your mobile devices, like, Notebook PC, Tablet PC, PDA, etc. With MMF GPS, one unit fit all interfaces.



MMF GPS as a RS-232 GPS

MMF GPS as a USB GPS

Foldable Compact Size:

With very smart hinge design, MMF GPS can folded from 180° to 0° to accommodate the best satellite receiving angle. You can adjust MMF GPS in best angle with your mobile device on the dashboard so that the external antenna will not needed. Also, you don't need to face the mobile device display to the sky for better receiving angle.

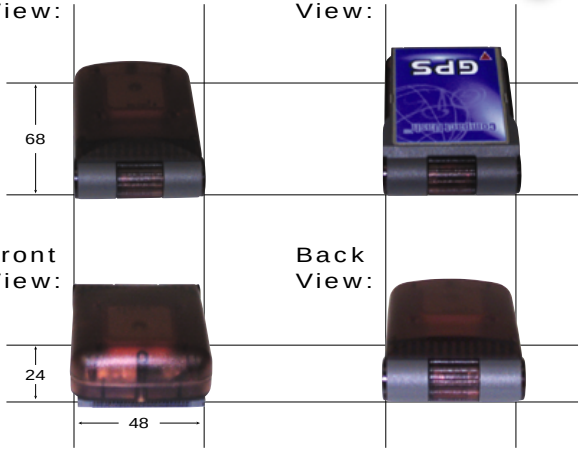
MMF GPS in Car navigation (without ext.antenna)

*** Remarks:**

1. Don't use the Mini-1394 port while using CompactFlash slot. Vi'ce ver'sa. One interface at a time.
2. For faster warm start, please charge the inclusive Li-on battery inside the receiver by plug into your mobile device for more than 6 hours right after purchasing.
3. All names or trademarks belong totheir respective companies.

Top View:

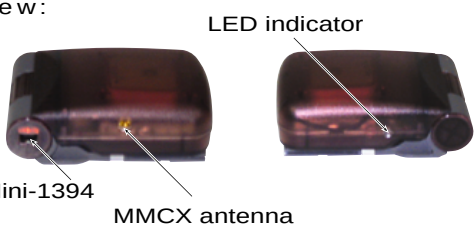
Bottom View:



Front View:

Back View:

Side View:



Unit: mm

Specifications

Interfaces: Compact Flash type 1 & Mini-1394
Protocol: NMEA0183 GGA, GSA, GSV , RMC, VTG, GLL
Baud Rate: 4800, N, 8, 1
Max. Update Rate: 1 Hz
Datum: WGS84
Channel: 12 channel all-in-vie w tracking
Frequency: L1, 1575.42MHz
Hot Start: 8 sec. Average
Warm Start: 38 sec. Average
Cold Start: 48 sec. Average
Reacquisition Time: 100 ms
Position Accuracy: 15m 2D RMS , SA off
Maximum Altitude: 18,000m
Maximum Velocity: 515m/s
Voltage: DC 3.3V+- 10%
Power consumption: 90mA contin uous mode
Antenna Type: Built-in activ e antenna
External Antenna Connector: MMCX (Optional)
Dimension: Fold 68 (L) x 48 (W) x 24 (H)mm Unfold 120 (L) x 48 (W) x 21 (H)mm
LED Indicator: 3D P ositioning (on) or Searching GPS (b linking)
Operating Temperature: -10 ° to + 70°
Storage Temperature: - 40 ° to + 85°
Operation Humidity: 95%, Non- Condensing

1. MMF GPS Introductions

MMF GPS is a GPS receiver with Compact Flash type1 / mini-1394 interfaces and built-in active antenna for high sensitivity to tracking signal. Based on the SiRF star IIe/LP low power chip set and supports all functions (Single Sat updates in reduced visibility, Superior urban canyon performance, Foliage Lock for weak signal tracking, etc.). MMF GPS is well suited to system integration and users who use any kinds of mobile devices, such as, PDA, notebook PC, Tablet PC, etc. It satisfies a wide variety of applications for car navigation, personal navigation or touring devices, tracking and marine navigation purpose. Users can simply plug it into a PDA or other type of handheld PC running with suitable mapping and routing software for navigation.

1.1 Package

Before you start up, make sure that your package includes the following items.
If any items are missing or damaged, contact your dealer immediately.

- MMF GPS Receiver unit
- Male mini-1394 to PS/II cable
- Carrying case
- User Manual CD(including User Manual, HaiTest Testing Program, Driver for PCMCIA card slot of Notebook PC)
- External Antenna (MMCX)*
- CF-PCMCIA Adapter*
- PS/II to PDA connector and car charger*
- PS/II to DB9 adapting cable*
- PS/II to USB adapting cable*

* Optional Accessories

1.2 LED Indicator

LED off	Receiver switch off
LED on	Signal searching
LED flashing	Position Fixed

1.3 External Antenna

Basically, you don't need external antenna to perform GPS positioning with MMF GPS since it already build-in active antenna. MMF GPS can receive good satellite signal without external antenna even using in car dashboard or side window. The only condition that you need external antenna is when MMF GPS can not directly "see" the sky, For instance, when you are in the middle of a car, or any environments that GPS signal is blocked, the external GPS antenna will help to receive better GPS signal.

Plug the external antenna with MMCX connector to the plug on the side of MMF GPS. Place the magnetic external antenna on the roof of the car or outdoor open-space, and make sure place it in correct direction. That is, the side with magnetic is the bottom side, and the upper side must face to sky in order to receive better signal.

Notice:
Hold the antenna connector while you plug the external antenna into MMF GPS or unplug the external antenna from MMF GPS. Do not pull the cable line.

2. Installation

MMF GPS supports plug and play.

Using Compact Flash Interface with PDA:

1. Plug in the CF part into your PDA equipped with Compact Flash interface.
2. Running the suitable mapping/navigation software and select the correct COM port & baud rate: 4800, N, 8, 1.

Usually, the COM port is COM 2~COM 6 depending on the PDA type.

User can use the testing program provided with the package to detect the COM port that MMF GPS is using.

Using Compact Flash Interface with Notebook PC:

1. Plug in MMF GPS into PCMCIA card slot of notebook PC through general Compact Flash to PCMCIA adapter.

2. Install the "Compact Flash to PCMCIA" drivers for WIN98, 2000, XP
3. Running the suitable mapping/navigation software and select the correct COM port & baud rate: 4800, N, 8, 1.

Using Mini-1394 Interface with PDA:

1. Plug in the inclusive mini-1394 to PS/II connecting cable to the side of MMF GPS
2. Using the correspondent PS/II to PDA plug/car charger cable to the mini-1394 connecting cable

Usually, the COM port is COM 1 depending on the PDA type

Using Mini-1394 Interface with Notebook PC's USB Port:

1. Plug in the inclusive mini-1394 to PS/II connecting cable to the side of MMF GPS
2. Using the PS/II to USB connecting cable to connect to the USB port.

Using Mini-1394 Interface with Notebook PC's Serial Port:

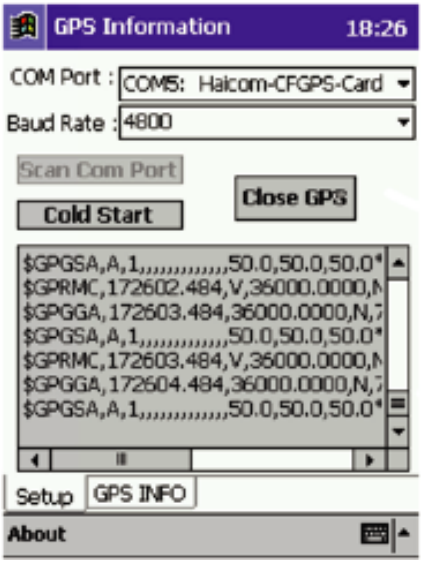
1. Plug in the inclusive mini-1394 to PS/II connecting cable to the side of MMF GPS
2. Using the PS/II to USB connecting cable to connect to the USB port.

2.1 How to test MMF GPS with PDA?

The testing prog ram, HaiTest, only supports the Microsoft Windows CE & Pocket PC based PDA platform.

1. Run the "HaiTest.exe" to execute the installation procedure of testing program (via PC and ActiveSync).
2. Connect MMF GPS into PDA.
3. Run the "HaiTest" program from "Start → Program files" of PDA. User can utilize such testing software to detect the COM port that MMF GPS is using and to check the GPS output data from MMF GPS

Here is the description of "HaiTest" testing program as follows:
User must select COM port (CF_CARD-GENERIC), Baud Rate (4800) and click the [Star GPS] button to start receiving GPS data.



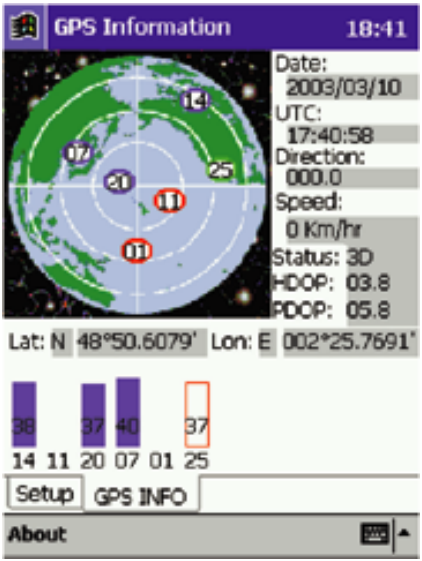
COM Port Select Auto detecting

Baud Rate Select

Sart / Close receving data

Clod Start to GPS

GPS NMEA Output data



2.2 How to test MMF GPS (through CF with PCMCIA adapter) for Notebook PC ?

Users can use the Hyper Terminal program of Windows to verify that the GPS is actually configured properly and working.

The Hyper Terminal program of Window 98 can not select COM port above COM5. Users test with map software directly.

1. Run the "Hypertrm.exe" from "Program → Accessories → Communications → Hyper Terminal".
2. Select the proper COM port for your GPS device.
3. Set COM port to :
   Baud r ate: 4800
   Data bit: 8
   P arity: None
   Stop bit: 1
   Flo w control: None
4. If no mistakes have been made in the configuration process there should be data being displayed from the window, which is confirmation that the communication between the GPS device and the "Hyper Terminal" software is working properly.

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TROUBLESHOOTING

Problem	Reasons	Solutions
No Position output but timer is counting	Weak or no GPS signal can be received at the place of MMF GPS unit	Connect an external antenna to MMF GPS and place the antenna under a open space, then, press 'Reset'
	At outdoor space but GPS signal is blocked by building or car roof	To try again, go to outdoor and press 'Reset' or connect external antenna on the side of MMF GPS to improve the poor GPS signal
Execute Fail	Wrong CPU type	PocketPC support multiple typs of CPU. Make sure you download the correct testing (or mapping software). You can use the PDA smart menu's 'setting' function to see wether the CPU type is correct or not.
Can's open COM port	The mini-1394 or CF connector did not insert correctly or some other application is the COM port	Insert all MMF GPS connector firmly or close all other application that occupied the COM port
Can not find MMF GPS	Poor connection	Check MMF GPS if insert firmly
No signal	No action for few minites may causes PocketPC into the power saving mode. It could close the COM port at the same time.	Close all applications and exacute it again to re-open the COM port
	Weak or no GPS signal when using MMF GPS indoor or inside the car.	Connect an external antenna to MMF GPS and place the antenna to an open space or car roof, then, press the Reset button